# Public Health Briefs

## Driver Age and Crash Involvement

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**Abstract:** The youngest and oldest drivers have the highest crash risk, but the problem lies predominantly in the youngest age groups because elderly drivers have low exposure. The elderly driver problem will increase gradually as their share of the population increases but will remain relatively small. The bulk of the problem will continue to reside among drivers younger than age 65, particularly the youngest drivers. (*Am J Public Health* 1989; 79:326–327.)

### *Introduction*

As the average age of the population of the United States increases, attention is being given to the economic, social, and health problems that will be created or aggravated by there being more older people. The problem of motor vehicle injuries has received increased attention in this regard because the oldest drivers, along with the youngest, are known to have high crash risks when they drive.[1,2] In this paper, current relationships between age and driver crash involvement are described, and an assessment is made of the effect an aging population will have on overall driver crash rates and the contribution of various age groups to the problem during the next 40 years.

### *Method*

The data used to compute crash involvement rates and to estimate future trends were as follows:

- Estimates of miles driven were obtained from the most recent (1983) National Personal Transportation Study (NPTS), based on a national survey of 6,438 households containing 17,382 members selected so as to represent the total civilian noninstitutional population of the United States.[3] As part of the survey all members of sampled households were asked about their travel on a randomly selected day. The data used here have been modified from the public use data supplied by the Federal Highway Administration. In the survey, many household trips were reported by someone other than the driver, and, if for some reason the driver was not subsequently interviewed, no driver trip was recorded. For such cases (about 9 per cent of all passenger car trips), no information on driver age and sex was available from the public use tapes. In the present study, the household trip data were reexamined and all driver trips are included.
- Numbers of drivers of passenger vehicles (cars, light trucks, vans) in fatal crashes were obtained from the Fatal Accident Reporting System (FARS), a computerized data base containing information on virtually all motor vehicle fatalities in the United States.[4]
- Estimated numbers of drivers of passenger vehicles in all police-reported crashes were obtained from the National Accident Sampling System (NASS), a probability sample of police-reported crashes in the United States.[5] To reduce variability from small sample sizes, three years of NASS data, 1982–84, were combined. The original national sampling weights were used, but the final estimate was divided by three to give an annual count.
- Population data (historical, present, and projected population estimates) were obtained from the US Bureau of the Census.[6–8]

### *Results*

The youngest and oldest drivers have the highest crash rates per miles driven, both for fatal and for all crashes (Figure 1). In terms of total numbers of drivers in fatal crashes, however, the problem lies predominantly in the youngest age groups (Figure 2). Half of all drivers in fatal crashes in 1983 were 16–29 years old.

The relatively small number of elderly drivers involved in fatal crashes despite their high crash risk is attributable to three main factors: there are fewer persons per single year of age among the elderly than among younger age groups, the rate of licensure is lower among the elderly, and licensed elderly drivers drive fewer miles on average than do younger drivers (Table 1).

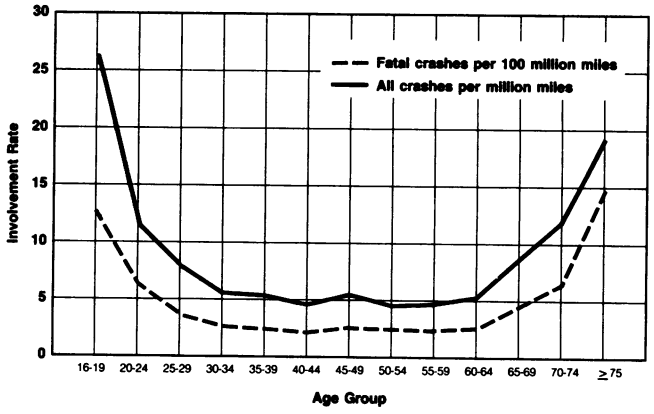


**FIGURE 1—Mileage-Based Crash Rates by Driver Age, United States, 1983**

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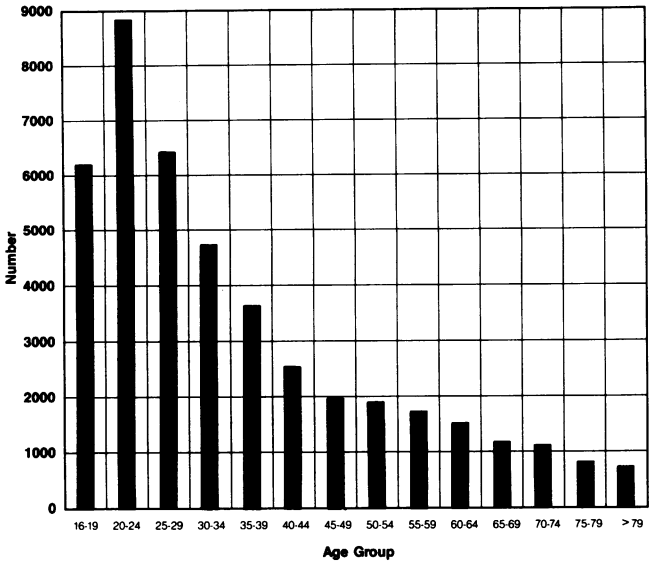


**FIGURE 2—Number of Drivers in Fatal Crashes by Age Group, United States, 1983**

In 1987, the 65-and-older group comprised 16 per cent of the population and 10 per cent of the drivers in fatal crashes (16.3 per 100,000 population). In contrast, 16 to 19 year-olds contributed 8 per cent of the population and 14 per cent of drivers in fatal crashes (47.1 per 100,000); 20 to 29 year-olds were 22 per cent of the population and 34 per cent of the drivers in fatal crashes (40.5 per 100,000).

The 65-and-older population is growing at a faster rate than other age groups; the result is that their population share has been increasing and will continue to do so, but the increase will be gradual until after the year 2010. In 2010, the 65-and-older group will represent 17 per cent of the population over age 15; by 2030, they will form 26 per cent of the population. However, because the age distribution is shifting such that an underrepresented group (the elderly) is becoming a larger proportion of the population and an overrepresented group (the young) is becoming a smaller proportion, if current (1987) per capita rates prevail the overall rate of drivers in fatal crashes would be lower in 2010 (24.5 per 100,000) and in 2030 (23.8) than it was in 1987 (26.5). These projected numbers indicate that in 2010 and 2030 there will be many more elderly drivers in fatal crashes, but in 2030 there would be more than twice as many 16 to 29 year-olds as 65-and-older drivers involved, and about the same number of teenage drivers as drivers over age 70.

*Discussion*

There has been increasing discussion of loss-reduction measures directed specifically to this age group, such as night driving curfews, special licensing actions, and driver training programs tailored to older drivers.[2,9] It is important, however, to keep the problem of elderly drivers in perspective.

**TABLE 1—Per Cent Licensed and Average Annual Passenger Vehicle Miles Driven per License Holder, by Age Group, 1983**

| Age Group (years) | Per Cent Licensed | Average Miles Driven |
|---|---|---|
| 16–19 | 61 | 5,199 |
| 20–29 | 83 | 8,529 |
| 30–39 | 92 | 9,746 |
| 40–49 | 89 | 9,141 |
| 50–59 | 88 | 7,679 |
| 60–69 | 79 | 5,743 |
| 70–74 | 41 | 4,463 |
| >74 | 36 | 2,667 |

Older drivers have an elevated crash risk when they drive but their exposure is low; their current contribution to the problem is small and, although increasing, will remain relatively small well into the next century. The bulk of the crash problem will continue to reside with drivers younger than age 65, and particularly with the youngest drivers. Identification of effective and feasible loss-reduction measures for high-risk subgroups such as the elderly is obviously important, but these efforts should not detract from the broader goal of development and application of countermeasures aimed at drivers of all ages.

It is possible that the per capita driver fatal crash involvement rate of the elderly will increase more (or decrease less) than that of other age groups in the next decades because, among other reasons, future generations of the elderly may be relatively older or they may drive more miles. If this occurs, the contribution of the elderly will be increased, although young drivers will almost certainly continue to be the predominant group in terms of numbers involved.

***ACKNOWLEDGMENT***

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**REFERENCES**

1. Williams AF: Nighttime driving and fatal crash involvement of teenagers. Accident Anal Prev 1985; 17(1):105.
2. Transportation Research Board: Transportation in An Aging Society: Improving Mobility and Safety for Older Persons, Vols. 1–2. Washington, DC: National Research Council, 1988.
3. Federal Highway Administration: Personal Travel in the US, Volume 1, 1983–1984, Nationwide Personal Transportation Study. Washington, DC: US Department of Transportation, 1986.
4. National Highway Traffic Safety Administration: Fatal Accident Reporting System, 1983. Washington, DC: US Department of Transportation, 1984.
5. National Highway Traffic Safety Administration: National Accident Sampling System, 1982–1984. Washington, DC: US Department of Transportation, 1985.
6. Bureau of the Census: Preliminary Estimates of the Population of the United States, by Age, Sex, and Race: 1970 to 1981. Series P-25, No. 917. Washington, DC: US Department of Commerce, 1982.
7. Bureau of the Census: Estimates of the Population of the United States, by Age, Sex, and Race: 1980 to 1986. Series P-25, No. 1000. Washington, DC: US Department of Commerce, 1987.
8. Bureau of the Census: Projections of the Population of the United States, by Age, Sex, and Race: 1983 to 2080. Washington, DC: US Department of Commerce, 1984.
9. Schmidt WE: Graying of America Prompts New Highway Safety Efforts. New York Times: April 6, 1988; 1.